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EXAMINER	
OMALLEY, MARY CATHERINE	
ART UNIT	**PAPER NUMBER**
2857	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,952	STEINMUELLER ET AL.	
	Examiner	Art Unit	
	MARY C. O'MALLEY	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16,18,19,21,23 and 25-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16,18,19,21,23 and 25-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/14/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The action is responsive to the amendments filed on 14 July 2010. Claims 16, 18, 19, 21, 23 and 25-36 are pending. Claims 16, 21 and 30 are amended. Claims 31-36 are new.

Information Disclosure Statement

2. The information disclosure statement filed 14 July 2010 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, the foreign patent DE 42 21 848 A1 does not have a translation, English abstract or explanation of relevance.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 16, 18, 19, 21, 23 and 25-35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 16, 18, 19, 21, 23 and 25-35 are rejected under 35 U.S.C.101 because the claimed invention merely recites a method for monitoring the functioning of sensors.

While Applicant has included the limitation "placing the sensor in a test state at time intervals", this limitation simply indicates that a sensor is available during a time interval for data gathering or observation and does not meaningfully limit the method steps because, the remaining method steps for monitoring the functioning of the sensor, specifically the steps of "storing, evaluating, predicting and obtaining", the subject matter to which this claim is drawn, are not linked to a statutory class, as they do not transform any underlying subject matter, nor is there a positive recitation of a device which is performing these method steps, and therefore these steps may be purely mental.

Claims 16, 18, 19, 21, 23 and 25-35 are rejected under 35 U.S.C. 101 because the claimed invention is neither tied to a machine or apparatus, nor does it perform a transformation, nor is there evidence of record that it is limited to a practical application of an abstract idea. As currently presented, the method steps in claims 16-30 need not be performed by a specific machine.

Based on recent Court decisions, it has been held that a § 101 process will usually (1) be tied to another statutory class (a particular machine or apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. Thus, to qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example, by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example, by identifying the material that is being changed to a different state.

As such, claim 16 only recites a method that includes steps that could be purely mental and the claim does not in any way tie the process to another statutory class nor does the claim transform an article to a different state or thing. Such claims are therefore non-statutory under 35 U.S.C. 101.

Claims 18, 19, 21, 23 and 25-35 do not remedy the deficiencies of the claims from which they depend, with respect to 35 USC 101.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16, 18, 19, 21, 23, 25-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choe (U.S. Patent No. 6,510,397) in view of Polla et al. (U.S. Patent No. 5,741,945) (hereinafter Polla).

Referring to claim 16, Choe teaches a method for monitoring the functioning of a plurality of sensors (see Choe, column 12 lines 39-41) which measure and monitor the state parameters of liquids or gases (see Choe, column 4 lines 26-30), comprising the steps of:

placing at least one of the plurality of sensors in a test state at time intervals (see Choe, column 12 lines 43-47 and lines 61-63);

registering test parameters at time intervals or at time intervals during the course of registering measured values (see Choe, column 12 lines 61-63);

storing the registered test parameters (see Choe, column 12 lines 47-50);

evaluating a backward-looking chronological development of the stored test parameters in order to perform functional monitoring (see Choe, column 18 line 58 – column 19 line 65);

predicting from said evaluations the development of sensor behavior to be expected in the future (see Choe, column 7 lines 13-15, column 14 lines 1-15 and column 18 line 65 – column 19 line 1); and

obtaining thereby information concerning the duration of the remaining disturbance-free operation of said at least one of the plurality of sensors (see Choe, column 14 lines 4-12), but does not teach using non-linear interpolation for evaluating the historical development over time of the stored test parameters in order to obtain function parameters of a function describing sensor behavior.

Polla teaches using non-linear interpolation for evaluating the historical development over time of the stored test parameters in order to obtain function parameters of a function describing sensor behavior (see Polla, column 7 lines 58-65, column 8 lines 17-57 and Figure 4; Polla explains correcting a temperature to remove distortions in the measurements caused by warpage of the sensor apparatus. The Examiner understands that the measurement distortions and sensor warpage are examples of sensor behavior, and the measured temperature data is then interpolated

non-linearly over time so that sensor warpage maybe determined and compensated for).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Choe to include the teachings of Polla because non-linear interpolation is a meter of design choice and using non-linear interpolation, when selected, would have allowed the skilled artisan to achieve the most accurate results (see Polla, column 8 lines 26-31).

Referring to claim 18, Choe teaches a function is specified and used for a particular sensor of said at least one of the sensors, which reproduces the experience-based sensor behavior (see Choe, column 17 lines 18-35).

Referring to claim 19, Choe teaches that the function involves a polynomial function (see Choe, column 19 lines 18-65).

Referring to claim 21, Choe teaches testing whether the wear limit of the sensor will be reached before the next registering of test parameters (see Choe, column 14 lines 1-12) and correspondingly issuing a corresponding warning or correspondingly initiating automatic changing measures (see Choe, column 4 lines 58-67).

Referring to claim 23, Choe teaches determining and issuing and displaying, and where necessary, initiating measures for maintenance on the basis of the information

concerning the duration of the remaining, disturbance-free operation (see Choe, column 5 lines 35-40).

Referring to claim 25, Choe teaches that as a test parameter, the slope of the sensor signal, or signals, in a particular test state of the sensor is registered and evaluated (see Choe, column 16 line 59 – column 17 line 17).

Referring to claim 26, Choe teaches that as a test parameter, the zero point of the sensor signal, or signals, in a particular test state of the sensor is registered and evaluated (see Choe, column 15 lines 21-33).

Referring to claim 27, Choe teaches that as a test parameter, the internal resistance of an electrode is registered and evaluated (see Choe, column 6 lines 23-26).

Referring to claim 28, Choe teaches that as a test parameter, the change of the dynamic behavior of signals produced by the sensor itself is registered and evaluated (see Choe, column 12 lines 43-47).

Referring to claim 29, Choe teaches a plurality of different test parameters are registered and evaluated (see Choe, column 13 lines 2-31).

Referring to claim 30, Choe teaches obtaining a sensor specific, basic data from a storage arrangement of the sensor or the measured value transmitter over the internet or over update media, for the evaluation (see Choe, column 9 lines 46-60).

Referring to claim 31, Choe teaches determining and issuing or displaying a predictive point in time for replacement of the sensor (see Choe, column 14 lines 20-23).

Referring to claim 36, Choe teaches a measuring setup (see Choe, column 1 lines 8-10), comprising:

a sensor adapted to measure and monitor state parameters of liquids or gases, the sensor comprising a signal output (see Choe, column 4 lines 26-30);

a calculating and storage unit, adapted to receive signals from said sensor (see Choe, column 9 lines 26-45);

a display and operating unit connected to the calculating and storage unit (see Choe, column 4 lines 58-67); wherein

said measuring setup is adapted to:

register and store test parameters at time intervals (see Choe, column 12 lines 47-50 and lines 61-63);

evaluating a backward-looking chronological development of the stored test parameters in order to perform functional monitoring (see Choe, column 18 line 58 – column 19 line 65);

predicting from said evaluations the development of the sensor behavior to be expected in the future (see Choe, column 7 lines 13-15, column 14 lines 1-15 and column 18 line 65 -- column 19 line 1), and obtaining thereby information concerning the duration of the remaining disturbance-free operation of said sensor (see Choe, column 14 lines 4-12); and

determining a predictive point in time for replacement of the sensor (see Choe, column 14 lines 20-23).

5. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choe (U.S. Patent No. 6,510,397) in view of Polla et al. (U.S. Patent No. 5,741,945) (hereinafter Polla) and in further view of Khuri et al. (U.S. Patent No. 6,567,679) (hereinafter Khuri).

Referring to claim 32, the combination of Choe and Polla teach all the features of the claimed invention except that the sensor is a pH sensor and the test parameter is the slop of the measurement chain voltage.

Khuri teaches that the sensor is a pH sensor and the test parameter is the slope of the measurement chain voltage (see Khuri, column 9 lines 1-6 and lines 18-21).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the combination of Choe and Polla to include the teachings of Khuri because a predictive method for determining when a sensor would fail would be obvious to use with any type of sensor, such as a pH sensor.

Referring to claim 33, the combination of Choe and Polla teach all the features of the claimed invention except that the slope of the sensor signal or signals is registered during interruption of measurement operation of the sensor during a calibration process.

Khuri teaches slope of the sensor signal or signals is registered during interruption of measurement operation of the sensor during a calibration process (see Khuri, column 9 lines 40-47).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the combination Choe and Polla to include the teachings of Khuri because determining a slope of the sensor signal is necessary for calibration and would have allowed the skilled artisan to determine which buffer will be used during sensor operation so that the most accurate values can be obtained (see Khuri, column 9 lines 18-54).

Referring to claim 34, the combination of Choe and Polla teach all the features of the claimed invention except that the zero point of the sensor signal, or signals is registered during interruption of measurement operation of the sensor during a calibration process.

Khuri teaches that the zero point of the sensor signal, or signals is registered during interruption of measurement operation of the sensor during a calibration process (see Khuri, column 9 lines 41-54).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the combination of Choe and Polla to include the teachings of

Khuri because determining a zero point is necessary for calibration and would have allowed the skilled artisan to determine which buffer will be used during sensor operation so that the most accurate values can be obtained (see Khuri, column 9 lines 18-54).

Referring to claim 35, the combination of Choe and Polla teach all the features of the claimed invention except that the electrode is a glass electrode or a reference electrode.

Khuri teaches that the electrode is a glass electrode (see Khuri, column 8 lines 46-47) or a reference electrode (see Khuri, column 8 lines 57-59).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the combination of Choe and Polla to include the teachings of Khuri because glass electrodes would have allowed the skilled artisan to obtain accurate measurements (see Khuri, column 8 lines 46-47) and using a reference electrode is necessary to make an electrical measurement by completing an electric circuit (see Khuri, column 8 lines 55-59).

Response to Arguments

6. Applicant's arguments filed 9 April 2008 have been fully considered but they are not persuasive.

Applicant argues that the 35 U.S.C. 101 rejections are improper because the method claims have structure, and while the method claims do recite collecting data

from sensors, the monitoring method steps are not being performed by a sensor, but rather the steps are being performed on the data collected from the sensors. As stated above, claims 16-30 are rejected under 35 U.S.C.101 because the claimed invention merely recites a method for monitoring the functioning of sensors. While Applicant has included the limitation "placing the sensor in a test state at time intervals", this limitation simply indicates that a sensor is available during a time interval for data gathering or observation and does not meaningfully limit the method steps because, the remaining method steps for monitoring the functioning of the sensor, specifically the method steps of "storing, evaluating, predicting and obtaining ", the subject matter to which this claim is drawn, are not linked to a statutory class, as they do not transform any underlying subject matter, nor is there a positive recitation of a device which is performing these method steps, and these steps may be purely mental. Applicant argues that the claim does not convey an abstract idea "but rather a method which can be carrier out by a measurement setup for predicting a point in time for replacement of a sensor. Replacing a sensor is a concrete and tangible function..." And while this is the case, the method claims presented do not positively recite a measurement setup which performs the method steps. Further, they do not recite sensor replacement. Therefore, these claims are rejected under 35 U.S.C. 101.

Applicant further argues that Choe does not teach using non-linear interpolation for evaluating the historical development over time of the stored test parameters in order to obtain function parameters of a function describing sensor behavior. However, this limitation is met by Polla. Polla teaches correcting a temperature to remove

distortions in the measurements caused by warpage of the sensor apparatus. The Examiner understands that the measurement distortions and sensor warpage are examples of sensor behavior, and the measured temperature data is then interpolated non-linearly over time so that sensor warpage maybe determined and compensated for (see Polla, column 7 lines 58-65, column 8 lines 17-57 and Figure 4). Therefore, Polla teaches using non-linear interpolation for evaluating the historical development over time of the stored test parameters in order to obtain function parameters of a function describing sensor behavior (see Polla, column 7 lines 58-65, column 8 lines 17-57 and Figure 4). It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Choe to include the teachings of Polla because non-linear interpolation is a meter of design choice and using non-linear interpolation, when selected, would have allowed the skilled artisan to achieve the most accurate results (see Polla, column 8 lines 26-31).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARY C. O'MALLEY whose telephone number is (571)272-2211. The examiner can normally be reached on Monday to Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Schechter can be reached on (571) 272-2302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mary Catherine O'Malley/
18 September 2010

/Andrew Schechter/
Supervisory Patent Examiner, Art Unit 2857